

Interpretation and Recommendation Guide for Compost

Evaluating the Characteristics of Your Compost

As partially decomposed organic matter, compost can have a range of characteristics. Compost can vary because of the raw materials used, degree of decomposition, moisture content, nutrient content, salt content, acidity/alkalinity and contaminants (organic and non-organic materials or heavy metals). Some quality measures such as carbon/nitrogen ratio, smell and particle size are indicative of some of the above mentioned characteristics or the effectiveness of the composting process. Large particle sizes are indicative of incomplete decomposition. A foul odor is indicative of a too wet or too tight compost pile. Finished compost is dark brown, and crumbly, and has an earthy smell. The original materials should not be recognizable. Inert materials such as glass or plastic ideally should be no greater than 1% of the compost volume. The table below lists characteristics measured by the MU Soil & Plant Testing Laboratory and briefly describes their relevance to compost quality.

Table 1. Compost analysis interpretation*

Characteristic	Reported Units	Desired Range	Comments
E. C. (electrical conductivity)			
Saturated Paste	mmhos/cm	< 4.0	Electrical conductivity is a measure of soluble salt content. Higher than desired salt levels can be harmful to germinating seeds and plants when compost is a component of the growing medium. The desired ranges may not apply when compost is used as an amendment because of the diluting effect of mixing the compost with soil.
1:1 soil to water		< 2.5	
1:2 soil to water		< 1.5	
Nutrient concentration	% of N-P-K; Ca, Mg, ppm of Zn, Fe, Mn, Cu	various	Low levels of nutrients may indicate incomplete decomposition or low amount of nutrients in the original material(s). Composting concentrates nutrients and provides for their slow-release, which can result in more efficient plant uptake and less fertilizer leaching. In the latter stages of composting, nitrate and ammonium levels increase. Nitrate can leach from the compost.
pH		6.0 – 7.5	pH indicates acidity/alkalinity. Compost may help buffer soil toward neutral, pH = 7.0. It depends on the kind of material composted and the final pH of the compost.
Moisture content	percent	40 - 50	Very wet compost can cause odor problems, while dry compost can be dusty and irritating to work with.
Organic matter content	percent	50 – 70	Organic matter in compost improves soil structure and water holding capacity.
Carbon/Nitrogen (C:N) ratio		10 - 30	C:N ratio is used as a measure of stability. A ratio of less than 25 likely indicates stable compost (the composting process is finished) from which nitrogen will be more available as mineral nitrogen (nitrate and ammonium).

*Adapted from Organic Materials Management. 1995. Michael Leanon. California Integrated Waste Management Board.

Compost Classes

Because of the large variety of materials that can be composted and the differing amount of effort that can be put into making compost, the quality of compost can vary significantly. Currently there are no formal classes for grading compost. The development of classes will be dependent on the specific needs for differentiating the qualities of compost. The intention of the two suggested classes described in Table 2 below is to recognize compost that deserves a premium price when marketed relative all other compost.

Class A: Compost of this quality is suitable as a major component of a growing medium for greenhouses or nurseries. It can also be used as a landscape or home garden soil amendment.

Class B: This class compost is suitable as a soil amendment in production of field grown nursery stock, sod or row crop production.

Table 2 Suggested compost classes.

Measurement	Class A	Class B
pH	6.0 – 7.0	6.0 – 7.5
C/N ratio	< 25	< 30
Particle size (inch)	< 1/2	< 1
Moisture content (%)	< 50	-
Electrical conductivity (mmho/cm)	< 2.5	< 5.0
Man-made contaminants (objects >1 cm/ cu. ft.)	< 10	< 50

Nitrogen Availability

Nitrogen is slowly released by compost and made available for plant growth. The amount is dependent on the compost application rate and the percent of nitrogen in the compost. The table below provides an estimate of the amount of nitrogen made available from compost during a one-year period.

Table 3 Nitrogen availability from various compost application rates[†].

Depth per Year	Application Rate		Percent Nitrogen of compost*				
			0.5%	1.0%	1.5%	2.0%	2.5%
inches	cu. yards/acre	tons/acre	lb of Available Nitrogen/1000 square feet*				
1/8	16.9	6.8	0.3	0.5	0.8	1.1	1.3
1/4	33.8	13.5	0.5	1.1	1.8	2.2	2.7
1/2	67.5	27.0	1.1	2.2	3.5	4.4	5.4
1	135.0	54.0	2.2	4.4	7.0	8.8	10.9
2	270.0	108.0	4.4	8.8	14.1	17.6	21.8

[†]Adapted from the Composting Council

*Based on an average compost weight of 800 lb/cubic yard (wet weight)